CIS 2166
HW11 Matrix Algebra

+1. Matrix operations.

$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$, $B = \begin{bmatrix} 4 & 3 & 2 \\ 2 & 3 & 4 \end{bmatrix}$, $C = \begin{bmatrix} 5 \\ 4 \\ 3 \end{bmatrix}$, $D = \begin{bmatrix} 9 & 6 & 5 \\ 8 & 4 & 3 \\ 7 & 2 & 1 \end{bmatrix}$, $E = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$

What is:

$A + 2B$
$(A - B)^T$
$B*B*C$
$C*C^T$
C^T*C
$D*A$
$A*D*C$
C^T*D
$D+D^T$
$(D+D^T)^T$
$D*D$
D^T*D

2. You can easily manipulate with rows and columns of a matrix by multiplying it with another matrix. You will see how by answering the following questions.
a) Show that multiplying D from left with E, E*D, transforms matrix D such that its first row is multiplied by two, and its second and third rows are swapped.

b) How does multiplying D from right with E, D*E, transform matrix D?

c) Create matrix E, such that multiplying D from left with E, E*D, transforms D such that its second row is divided by 2 and its first and third rows are swapped.

d) Create matrix E, such that multiplying D from left with E, E*D, transforms D such that its second row is the original second row minus the original first row of D.